Recent Trends in 3D Computer Vision (RT3DCV)

Pre-course meeting - Summer semester 2024

PD Federico Tombari

Tutors: Nikolas Brasch, Mahdi Saleh, Markus Herb, Evin Pinar Örnek, HyunJun Jung, Kunyi Li, Felix Tristram, Klara Reichard, Changxuan Li, Christian Kapeller, Nils Morbitzer

Goals

- You are going to learn:
  - about the state of the art in Computer Vision and Deep Learning
  - about current challenges in 3D vision research and its applications

- And also:
  - how to read and understand a scientific article
  - how to give a tech talk to an audience, and related Q&A

Seminar contents

- The seminar includes a selection of the most recent and relevant papers in the field of computer vision and deep learning for 3d perception
  - Object detection and tracking
  - 6D Object / Human / Camera pose estimation
  - Generative shape synthesis / 3D neural rendering
  - 3D scene understanding
  - Implicit neural representations
  - Multi view depth estimation / RGB fusion
  - Object & Scene Reconstruction / Completion
  - SLAM / Structure-from-Motion

Seminar Schedule

- 4-5 sessions (Fridays 2 - 4 pm) + 1 introductory lecture
- 3 presentations per session
- In-person attendance is mandatory
  - Need to provide reason for missing a class (e.g. doctor's note, proof of important scheduling conflict, etc.)
- Paper assignments:
  - We provide a list of papers
  - Students can express their preferences
  - Matching trying to maximize global happiness
- Preparation
  - Every paper has a tutor assigned to it
  - Student should start discussion with the tutor early to ask questions about the paper and get feedback for the presentation
  - Usually 1-3 meetings in the weeks before the presentation date

Presentation

- Each presentation is 15-20 minutes + 10 minutes for Q&A
- The presentation should cover all relevant aspects of the paper
  - Introduction and state of the art
  - Main contribution(s)
  - Experimental results
  - Discussion, authors & personal summary and future work
- The presentation should be self-contained
- All students are expected to attend all presentations and interact during Q&A (this will influence your final mark)

Evaluation criteria

- Quality of presentation (slides and speech)
  - Quality of the talk
    - Technical quality (grasp of the paper & condense technical contributions)
    - Presentation style (pace & tone)
    - Language (audible, clear sentences)
  - Quality of the slides
    - Layout (clean, not overloaded, not too much text)
    - Completeness (e.g. intro, sota, contributions, results, summary, outlook)
    - Figures
    - Citation style
  - Q&A
    - Preparation and understanding of the topic
- Interaction and participation during the other talks

Application

- Register your choices via [TUM matching system](#)
- To increase your chances you are encouraged to submit a motivation letter to:

  rt3dcv@mailnavab.informatik.tu-muenchen.de

- Relevant information
  - Name and email
  - Study program and semester
  - Motivation to take the course
  - Previous experience in the field of CV & DL (courses, projects, …)
  - Latest CV (not mandatory)
  - Transcripts of records (not mandatory)
- **Deadline 14.02.2024**

Any questions?

(These slides can be found on the course website after the meeting)